CLAIMS

1. An R-T-B system rare earth permanent magnet, which comprises a sintered body comprising at least: main phase grains comprising $R_2T_{14}B$ compounds (wherein R represents one or more rare earth elements, providing that the term "rare earth element" include Y (yttrium), and T represents one or more transition metal elements essentially containing Fe, or Fe and Co); and a grain boundary phase having a higher amount of R than said main phase grains,

which is characterized in that said sintered body satisfies the following formulas:

AVE(X)/Y = 0.8 to 1.0; and

(X/Y)max/(X/Y)min = 2.0 to 13.0,

wherein X represents (the weight ratio of heavy rare earth elements)/(the weight ratio of all the rare earth elements) for a given number of said main phase grains in said sintered body;

Y represents (the weight ratio of heavy rare earth elements)/(the weight ratio of all the rare earth elements) for said sintered body as a whole;

AVE(X) represents the mean value of X obtained for the given number of said main phase grains;

(X/Y)min represents the minimum value of (X/Y) obtained for the given number of said main phase grains; and

(X/Y)max represents the maximum value of (X/Y) obtained for the given number of said main phase grains.

2. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that said sintered body satisfies the formulas: $(X/Y)min = 0.1$ to 0.6; and $(X/Y)max = 1.0$ to 1.6.

3. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that said sintered body satisfies the formula: $AVE(X)/Y = 0.82$ to 0.98.

4. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that said sintered body satisfies the formula: $(X/Y)max/(X/Y)min = 3.0$ to 10.0.

5. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that said sintered body satisfies the formulas: $(X/Y)min = 0.1$ to 0.5; and $(X/Y)max = 1.1$ to 1.5.

6. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that 85% or more of the total area occupied by said main phase grains is occupied by grains having a grain size of 15 μm or smaller.

7. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that 85% or more of the total area occupied by said main phase grains is occupied by grains having a grain size of 10 μm or smaller.

8. The R-T-B system rare earth permanent magnet according to claim 1, characterized in that said magnet has a composition consisting essentially of 25 to 37 wt% of R, 0.5 to 1.5 wt% of B, 0.03 to 0.3 wt% of Al, 0.15 wt% or less of Cu (excluding 0), 2 wt% or less of Co (excluding 0), and the balance substantially being Fe.

9. The R-T-B system rare earth permanent magnet according to claim 8, characterized in that said magnet comprises 0.1 to 8.0 wt% of heavy rare earth elements as R.

10. A method for producing an R-T-B system rare earth permanent magnet, which comprises a sintered body comprising at least: main phase grains comprising $R_2T_{14}B$ compounds (wherein R represents one or more rare earth elements, and T represents one or more transition metal elements essentially containing Fe, or Fe and Co); and a grain boundary phase having a higher amount of R than said main phase grains, wherein said sintered body comprises heavy rare earth elements as R,

which is characterized in that the method comprises the steps of:

compacting, in a magnetic field, a low R alloy powder mainly comprising an $R_2T_{14}B$ phase, and a high R alloy powder having a higher amount of R than said low R alloy powder and comprising Dy and/or Tb as such R, and

sintering a compacted body obtained by said compacting in a magnetic field,

wherein said high R alloy powder contains 30 wt% or more of heavy rare earth elements contained in said sintered body.

11. The method for producing an R-T-B system rare earth permanent magnet according to claim 10, characterized in that the amount of the heavy rare earth elements contained in said sintered body is between 0.1 and 8.0 wt%.

12. The method for producing an R-T-B system rare earth permanent magnet according to claim 10, characterized in that said high R alloy powder shares 50% or more by weight of the heavy rare earth elements contained in said sintered body.

13. The method for producing an R-T-B system rare earth permanent magnet according to claim 10, characterized in that said sintered body has a composition consisting essentially of 25 to 37 wt% of R, 0.5 to 1.5 wt% of B, 0.03 to 0.3 wt% of Al, 0.15 wt% or less of Cu (excluding 0), 2 wt% or less of Co (excluding 0), and the balance substantially being Fe.

14. The method for producing an R-T-B system rare earth permanent magnet according to claim 10, characterized in that said low R alloy powder has a composition consisting essentially of 25 to 38 wt% of R, 0.9 to 2.0 wt% of B, 0.03

to 0.3 wt% of Al, and the balance substantially being Fe.

15. The method for producing an R-T-B rare earth permanent magnet according to claim 10, characterized in that said high R alloy powder has a composition consisting essentially of 26 to 70 wt% of R, 0.3 to 30 wt% of Co, 0.03 to 5.0 wt% of Cu, 0.03 to 0.3 wt% of Al, and the balance substantially being Fe.